

NIKITIN, Nikolay Ignat'yevich. Prinimali uchastiye: ABRAMOVA, Ye.A., starshiy nauchnyy sotr., kand. khim. nauk; AKIM, E.L., inzh.-tekhnolog; ANTONOVSKIY, S.D., dots., kand. tekhn. nauk; VASIL'YEVA, G.G., inzh.-tekhnolog; ZAYTSEVA, A.F., starshiy nauchnyy sotr., kand. tekhn.nauk; KLENKOVA, N.I., kand. tekhn. nauk; MALEVSKAYA, S.S., kand. khim. nauk; NIKITIN, V.N. starshiy nauchnyy sotr., kand. fiz.-mat. nauk; ODOLINSKAYA, A.V., kand. tekhn. nauk, dotsent; PETROPAVLOVSKIY, G.A., starshiy nauchnyy sotr., kand. tekhn. nauk; PONOMAREV, A.N., kand. tekhn. nauk, dots.; SOLECHNIK, N.Ya., prof., doktor tekhn. nauk; TOKAREV, B.I., inzh.; TSVETAYEVA, I.P., kand. tekhn. nauk; CHOCHIEVA, M.M., kand. tekhn. nauk; ELIASHBERG, M.G., doktor tekhn. nauk; YUR'YEV, V.I.; KARAPETYAN, G.O., red.izd-va; ZAMARAYEVA, R.A., tekhn. red.

[Wood chemistry and cellulose] Khimiya drevesiny i tselliulozy. Moskva, Izd-vo Akad.nauk SSSR, 1962. 711 p. (MIRA 15:2)

1. Chlen-korrespondent Akademii nauk SSSR (for Nikitin). 2. Zaveduyushchiy kafedroy fizicheskoy i kolloidnoy khimii lesotekhnicheskoy akademii (for Yur'yev). (Cellulose)

YUR'YEV, V.I.; POZIN, S.S.; SKURIKHINA, G.M.

Studying the adsorption and electrokinetic characteristics of sulfite and sulfate celluloses in relation to aluminum salt solutions. Trudy LTA no.91:11-20 '60. (MIRA 15:12)

1. Leningradskaya lesotekhnicheskaya akademiya imeni Kirova.

(Cellulose—Electric properties)
(Aluminum salts)                      (Adsorption)

0-001761, 350, 302, 003/010  
003, 340"

...and the *Journal of the American Medical Association* (JAMA) has been the most influential journal in the field of medicine for over a century.

... .. properties of viscose  
... .. following book companies

... .. 1963, 341-387

the station, S is the streaming  
of the fluid in which the station passes





YUR'YEV, V. I.

Parametric amplifier with transverse interaction and electrostatic  
focusing of the electron beam. Izv.vys.usheeb.zav.; radiofiz. S  
no.1:153-161 '65. (MIRA 18:6)

L 21520-66 EAT(1)/EHA(n) JM

ACC NR: AP6007500

SOURCE CODE: UR/0109/66/011, G 2/0237/0243

AUTHOR: Yuri'yev, V. I. Machulka, O. A.

ORG: none

TITLE: Experimental investigation of the suppression of near-carrier 1-f fluctuation in a power TW-tube output

SOURCE: Radiotekhnika i elektronika, v. 11, no. 2, 1966, 237-243

TOPIC TAGS: traveling wave tube, signal noise separation

ABSTRACT: The results of an experimental investigation of the effect of secondary emission upon 1-f noise in a 10-kv 10-kw cw TW-tube are reported. For controlling the collector secondary emission, a special ring electrode was mounted in the tube, between the collector and the ~~ray-structure~~ output end. Both the collector and the structure were grounded, while the ring received a negative potential (1200 to 2000 v) from a special h-v rectifier. Mainly, the ring electrode repelled secondary slow electrons toward the collector; this resulted in decreasing the secondary-electron volume density and also the ion density. Through lowering the collector-region potential with respect to the beam potential by 10%, the phase noise could be reduced by 10-15 db. Orig. art. has: 8 figures and 5 formulas. [03]

SUB CODE: 09 / SUBM DATE: 30Oct64 / OTH REF: 004/ ATD PRESS: 4222

Card 1/1 *da*

UDC: 621.385.632:621.391.822.3



L-53019-65

ACCESSION NR: AP5010685

ka v. 5, 73, 1961). Plots are presented of the gain, minimum length of coupler, frequency, and electron velocity on the potential difference between the electrodes of the coaxial line, of the dependence of the gain, minimum length, frequency, and unperturbed radius of the trajectory of the electron on the radius of the outer electrode, and the dependence of the gain on the pump signal power. Orig. art. has 3 figures and 37 formulas.

ASSOCIATION: None

SUBMITTED: 30Mar64

ENCL: 00

SUB CODE: EC

NR REF SOV: 006

OTHER: 011

654 2/2

YUR'YEV, V.K.

Theoretical shape of a beam having a uniform resistance to  
bending. Trudy KAI 46:87-94 '59. (MIRA 14:2)  
(Girders)

YUR'YEV, V.K.

Design of continuous beams with an even transverse strength taking the gravity into consideration. Trudy KAI no.62:39-43 '61. (MIRA 17:2)

10.6000 1327

S/124/61/000/012/035/038  
D237/D304

AUTHOR: Yur'yev, V. K.

TITLE: Calculating panels of constant cross-section

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 12, 1961,  
18, abstract 12V128 (Tr. Kazansk. s.-kh. in-  
ta, 1958, 1, no. 37, 149-158)

TEXT: Stresses are determined in a thin-walled panel on a framework under a co-planar load of axial forces applied to the ends of longitudinal ribs and of a transverse load. The proposed method of calculation is based on the method of Yu. G. Odínokov (Tr. Kazansk. aviats. in-ta, 1946, no. 18), which allows arbitrary longitudinal displacements of the points of the construction; it is also assumed that the shape of transverse cross-section of the construction does not change during deformation. The solution for the panel is extended to numerical formulas. From the given example it can be seen that the solu-

✓C

Card 1/2



Calculating panels of...

S/124/61/000/012/035/038  
D237/D304

tion well represents the interaction of forces in the construc-  
tion. [Abstracter's note: Complete translation.]

✓e

Card 2/2



YUR'YEV, V.M., red.; SHPAK, Ye.O., tekhn.red.

[Study of thermosetting plastics] Issledovaniia v oblasti  
termoreaktivnykh plastmass. Moskva, Gos.nauchno-tekhn.isd-vo  
khim.lit-ry, 1959. 98 p. (MIRA 13:6)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut  
plasticheskikh mass.  
(Plastics)

5(3)

AUTHORS:

Yur'yev, V. M., Pravednikov, A. N.,  
Medvedev, S. S., Academician

SOV/20-124-2-26/71

TITLE:

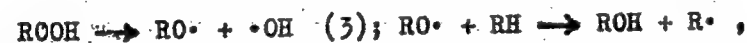
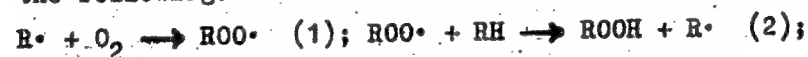
Influence of Side Chains on the Rate of Oxidation of Carbon  
Chain Polymers. (Vliyaniye bokovykh otvetvleniy na skorost'  
okisleniya karbotsepykh polimerov)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 335-337  
(USSR)

ABSTRACT:

The principal reactions in the oxidation of hydrocarbons are  
the following:



$\cdot OH + RH \rightarrow H_2O + R\cdot \quad (4)$ . The rates of all these elementary  
reactions determine the rate of oxidation. As is known the rate  
is considerably decreased on the transition from low molecular  
weight to high molecular weight compounds of analogous structure  
(Refs 1, 2). This might be explained as follows: The removal of  
one hydrogen atom from the hydrocarbon atom is accompanied by a

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SOV/20 -124-2-26/71

Influence of Side Chains on the Rate  
of Oxidation of Carbon Chain Polymers

transition of the corresponding link of the molecule from a tetrahedral to a plane configuration. In polymers, links of the polymer chain are displaced. This is bound to increase the activation energy and thus to retard the reaction (as compared with the analogous reactions of low molecular weight compounds). The separation of one hydrogen atom from a side group (methyl-, propyl- and others) is not accompanied by a displacement of the links of the polymer chains and must possess the same activation energy as the corresponding reactions of the low molecular weight compounds. It can therefore be expected that the oxidation of the polymers with comparatively short side chains will take place mainly on the side chains. To control this assumption the authors synthesized polymethylene as well as polymers which contained the methyl and propyl side groups (Ref 4). The experiments concerning the oxidation of these polymers have shown that the introduction of side groups rapidly increases the absorption rate of oxygen (Fig 1,a); at the same time the number of oxygen molecules which are used for the cleavage of the principal chain (Figs 3, 4) increases, i.e. the oxidation really proceeds in the side chains prevalently. At a high oxidation intensity of the polymers which were produced by decomposition

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SOV/20-124-2-26/71

Influence of Side Chains on the Rate  
of Oxidation of Carbon Chain Polymers

of the diazo compounds, a "sewing up" (zashivaniye) of the polymer results as a consequence of ether bridges between the macro-molecules. A very low molecular fraction appears within the system as well. Possibly, these variations are due to the proceeding of a bimolecular reaction under participation of 2 oxygen containing radicals (Ref 6). Polystyrene is not "sewed up" at an oxidation intensity of up to about 20 ml O<sub>2</sub> per 1 g polymer, since the concentration of the radicals and the oxidation rates, respectively, seem to be too low. There are 4 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Scientific Physical and Chemical Research  
Institute imeni L. Ya. Karpov)

SUBMITTED: September 29, 1958

Card 3/3

5 (4), 5 (3)  
AUTHORS:

Yur'yev, V. M., Pravednikov, A. N.,  
Medvedev, S. S., Academician

SOV/20-125-6-36/61

TITLE:

The Influence of Oxidation Products on the Kinetics of the  
Oxidation of Cetane (Vliyaniye produktov okisleniya na  
kinetiku okisleniya tsetana)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,  
pp 1301-1302 (USSR)

ABSTRACT:

The oxidation of cetane takes place at 140° in a closed system with circulating oxygen. Figure 1 shows that, up to a reaction yield of 25-30 %, the reaction develops autocatalytically, after which it decreases rapidly and continues at a nearly constant rate above a reaction yield of 40-50 %. The concentration of peroxide compounds has a maximum at a reaction yield of 25-30 %, after which it also decreases and becomes nearly constant at a reaction yield of 40-50 %. These phenomena are indicative of the fact that, in the course of oxidation, processes occur which reduce the rate of oxidation. As in the case of hydrocarbon oxidation, the system becomes divided into two layers in the course of the process, an upper layer containing hydrocarbons and a

Card 1/2

The Influence of Oxidation Products on the Kinetics  
of the Oxidation of Cetane

SOV/20-125-6-36/61

lower one consisting of oxidation products, products of the lower layer were added to the cetane, which resulted in a reduction of the reaction rate (Fig 3). On the other hand, removal of the lower layer from the reaction vessel caused acceleration of the reaction. This proves that the reduction of reaction rate is caused by the accumulation of products which interrupt the development of the reaction. There are 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Scientific Research Institute for  
Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: February 11, 1959

Card 2/2

YUR'YEV, V.M.

507/4984

PHASE I BOOK EXPLOITATION

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii SSSR, Moskva, 14-18 iyunya 1960 g.; doklady i avtoreferaty. Sektsiya III. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18, 1960; Papers and Summaries) Section III. [Moscow, Izd-vo AN SSSR, 1960] 469 p. 55,000 copies printed.

Tech. Ed.: P. S. Kasina.

Sponsoring Agency: The International Union of Pure and Applied Chemistry. Commission on Macromolecular Chemistry.

NOTE: This book is intended for chemists interested in polymerization reactions and the synthesis of high molecular compounds.

CONTENTS: This is Section III of a multivolume work containing papers on macromolecular chemistry. The articles in general deal with the kinetics of polymerization reactions, the synthesis of special-purpose polymers, e.g., ion exchange resins, semiconductor materials, etc., methods of analyzing polymerization reactions, properties and chemical interactions of high molecular materials, and the effects of various factors on polymerization and the degradation of high molecular compounds. No personalities are mentioned. References given follow the articles.

Yur'yev, V. M., A. M. Pravednikov, and S. S. Medvedev (USSR). The Effect of Formic Acid and Formates on the Oxidation of Hydrocarbons and Hydrocarbon Polymers	364
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Wichterle, O., Z. Sittler, and P. Jelinek (Czechoslovakia). Degradation of Poly- $\epsilon$ -Caprolactam as a Result of Exchange Reaction Between Alkyl Bonds	380
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YUR'YEV, V.M.; ROL'BEYN, L.; OL'KHOVSKIY, A., obshchestvennyy inspektor po  
okhrane truda; BUZNITSKIY, V.A., inzh.-kontroler

Readers' letters. Bez.truda v prom. 6 no.1:36 Ja '62. (MIRA 15:1)

1. Uchastkovyy gornotekhnicheskyy inspektor Kuybyshevskoy rayonnoy gornotekhnicheskoy inspeksii, Donetskogo okruga (for Yur'yev).
2. Glavnyy inzh. UM-79 tresta 19, g. Minsk (for Rol'beyn).
3. Upravleniye Krivorozhskogo okruga Gosgortekhnadzora USSR (for Buznitskiy).

(Industrial safety)



YUR'YEV, V.M.; TELESHOVA, A.S.; APTEKAR', Ye.L.; ARDASHNIKOV, A.Ya.;  
REZNIKOVA, O.Ya.; PRAVEDNIKOV, A.N.

Use of ion-sorption ESh-1 pumps in the MI-1305 mass-spectrometer.  
Zav.lab. 30 no.3:375-376 '64. (MIRA 17:4)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni  
Karpova.

YUR'YEV,

А. В. Брусил, А. В. Азаров, В. Н. Митин,  
А. Р. Селюк

Образцы электротехнических устройств для по-  
лучения электрических сигналов в диапазоне  
0,5-10 МГц.

А. Д. Селивановский,  
В. А. Югов,  
В. Н. Кривошеин,  
А. В. Кривошеин

Почтовые балансы для измерения мощности  
СВЧ

А. М. Вайсман

Оптимальные параметры радиотехники

М. В. Михайлов

О коррелированных сигналах в каналах связи с  
длинами 5-10 МГц.

В. С. Брусил

Метод калибровки и контроля электрических изме-  
рений в диапазоне от 10 до 20 МГц.

19 страниц  
(с 10 до 23 часов)

40

Г. М. Брусил,  
В. В. Заварин,  
В. В. Кривошеин

Метод измерения мощности радиотехники для измерения  
в радиотехнических устройствах

Н. Р. Гусев, В. В. Кривошеин

Устройство для измерения спектра сигнала в  
полосе частоты и субполосе частоты

В. В. Кривошеин,  
В. В. Кривошеин

Измерение радиотехнических параметров ступен-  
чатых объектов в диапазоне СВЧ

А. В. Брусил

Точность измерения КСВН с помощью фазометра  
и волновой трубы

11 страниц  
(с 10 до 16 часов)

А. В. Брусил

Метод измерения коэффициента корреляции сигналов  
в диапазоне 0,5-10 МГц

41

report submitted for the Continental Meeting of the Scientific Technological Society of  
Radio Engineering and Electrical Communications in. A. S. Popov (VSEI), Moscow,  
8-12 June, 1959

~~YUR'YEV, V.N.~~ starshiy inzh.-tekhnolog

Scientists are helping the workers. Elek.1 tepl.tiaga 5  
no.9:32 S '61. (MIRA 14:10)

1. Lokomotivnoye depo imeni Il'icha Moskovskoy dorogi.  
(Railroads--Repair shops) (Railroads--Employees)

YUR'YEV, V.N., starshiy tekhnolog; SAVCHENKO, I.T., starshiy teplotekhnik

We received the TBM2 diesel locomotive. Elek.i tepl.tiaga  
6 no.4:6 Ap '62. (MIRA 15:5)

1. Lokomotivnoye depo im. Il'icha, Moskva (for Yur'yev).  
(Diesel locomotives—Testing)

YUR'YEV, V.N., starshiy inzh.-tekhnolog; BROVKIN, M.N., starshiy tekhnik

Cleaning of woolen fuel filter plates. Elek. i tepl. tiaga 6  
no.11:24 N '62. (MIRA 16:1)

(Diesel locomotives--Fuel systems)

YUR'YEV, V.S.

Automatic submerged arc welding units for vertical cylinders.

Proizv. opyt v obl. svar. no.1:69-71 '56.

(MLRA 9:10)

(Cylinders--Welding) (Electric welding)

SOV/137-59 2-3118

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 2, p 119 (USSR)

AUTHORS: Yur'yev, V. S., Pisarev, L. Ya.

TITLE: An Automatic Arc-welding Unit for Welding of Flanges (Elektrosvarochnyy avtomat dlya privarki flantsev)

PERIODICAL: Byul. tekhn. ekon. inform. Sovnarkhoz Rostovsk. ekon. adm. r-ra, 1958, Nr 4, pp 25-26

ABSTRACT: Developed by the design department of the Taganrog "Krasnyy Kotel'shchik" ["Red Boilermaker"] plant, the automatic welding machine described is designed for welding of flanges to various cylindrical articles. The operating characteristics of the unit are as follows: Maximum diameter 1600 mm; minimum diameter 200 mm; thickness of wall 10-30 mm; maximum length 6000 mm; speed of welding 10-30 m/hr. The welding head is identical to that employed on the UT-2000 automatic welding machine equipped with a traveling mechanism. The speed of welding can be controlled continuously, the face plate may be rotated through an angle of 90°. The electric current is supplied to the welding head through a cable from a transformer of the STD-1000 type. Annular surfacing of flat areas may be performed with this welding unit.

N. K.

Card 1/1

YUR'YEV, V.S.

Unit for flame and mechanical pipe cleaning. Biul.tekh.-ekon.-  
inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform. 16 no.7:36-38  
'63. (MIRA 16:8)

(Pipe—Cleaning)



1. Title: *Search for H<sup>+</sup> nuclei*

2. Author(s): *Porter, R. A., Tarkenton, W. W. and Porter, R. A.*

3. Title: *An attempt to discover the H<sup>+</sup> nuclei among the carbon fission products*

4. Date: *1955*

5. Summary: *Experiments were conducted to discover the H<sup>+</sup> nuclei among the carbon fission products. The results showed that the H<sup>+</sup> nuclei are not present in the carbon fission products. The experiments were conducted using a cyclotron and a detector. The results showed that the H<sup>+</sup> nuclei are not present in the carbon fission products. The experiments were conducted using a cyclotron and a detector. The results showed that the H<sup>+</sup> nuclei are not present in the carbon fission products.*

6. Indexing: *1. Carbon fission products 2. H<sup>+</sup> nuclei 3. Cyclotron 4. Detector*

YURYEV, V.V. (Asst. Prof.)

"On the Problem of Producing Goods and the Law of Cost under Socialism."

report presented at the 13th Scientific Technical Conference of the Kuybyshev  
Aviation Institute, March 1959.

S/057/63/033/002/012/023  
B108/B186

AUTHORS: Bel'skiy, S. A., Myakinin, Ye. V., Petrov, A. M.,  
Romanov, A. M., and Yur'yev, V. V.

TITLE: The energy transfer to the wall of the discharge chamber in  
the "Alpha" machine

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 2, 1963, 212 - 213

TEXT: The energy was measured with integral-type semiconductor and wire  
bolometers connected to a measuring bridge. The vacuum in the hydrogen  
plasma was  $5 \cdot 10^{-5}$  -  $2 \cdot 10^{-3}$  mm Hg. The energy measured by the detectors  
rises monotonically with the voltage at the discharge capacitor battery.  
This dependence is slightly less than in accordance with a square law.  
Experiments with scintillation and boron counters and with a  $\text{CaSO}_4$ -Mn

thermo-luminophor showed that the energy transferred to the wall by short-  
wave electromagnetic radiation is not more than 10% of the plasma energy.  
A larger part of energy lost to the walls must be due to other processes  
(neutral particles, ZhTF, 30, 12, 1419, 1960).

SUBMITTED: April 9, 1962  
Card 1/1

UR/0048/65/029/010/1942/1945

Yur' V. V. Myuklin, Ye. V.; Romanov, A. M.; Shalak, N. I.; Yur' V.

**TITLE:** Investigation of low-energy charged particles with the Cosmos 12, 13, and Elektron 2 satellites. *Trudy Akad. Nauk SSSR, Seriya fizicheskaya* 1945, No. 1, p. 1-10.

**ORIGIN:** In USSR. *Izvestiya. Seriya fizicheskaya* 1945, No. 1, p. 1-10.

The authors have measured slow and fast electron fluxes in the atmosphere of the Earth from the Cosmos 12, 13, and Elektron 2 satellites. The measurements were made with the help of a Geiger-Müller counter surrounded with plastic scintillation counters connected in series. The results of the measurements are presented in the form of graphs and tables. The fluxes of slow and fast electrons are shown as a function of the magnetic latitude and the magnetic field strength. The fluxes of slow electrons are shown as a function of the magnetic latitude and the magnetic field strength. The fluxes of fast electrons are shown as a function of the magnetic latitude and the magnetic field strength.



ACCESSION NR: AP5026236

EXTRACTED 00

EMERGENCY 00

SUB CODE: NP ES

REF 001, 001

INDEX 000

7.2

YEFIMOV, Yu.Yo.; MYAKININ, Ye.Y.; ROMANOV, I.M.; SHOLAK, N.I.; YURIEV, V.V.

Some results of neutron measurement in the atmosphere. Izv. AN  
SSSR.Ser.fiz. 20 no.10:1942-1945 6 figs.

(MIRA 28:10)

YUR'YEV, V.YA.

25820. YUR'YEV, V. YA. Semenovodstvo rzhn khar'kovskoy 194. Seleksiya i  
semenovodstvo, 1949, No 8, S. 7-11

SO: Letopis' Zhurnal'nykh Statey Vol. 34, Moskva 1949



YUR'YEV, V. Ya.

MULYARCHUK, S.O.; YUR'YEV, V. Ya., diyenny chlen.

Prospective use of glutinous alfalfa (*Medicago glutinosa* M.B.) for selection.  
Dop. AN URSR no. 6:463-466 '52. (MIRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Yur'yev).
2. Nizhyns'kyy derzhavnyy pedagogichnyy instytut im. M.V. Hoholya (for Mulyarchuk). (Alfalfa)

YUR'YEV, V. Ya.

"The principal problems of wheat selection."

reported at Conference on Problem of Heredity and Variability, held at  
Institute of Genetics, AS USSR, 8-14 Oct 1957  
Vestnik AN SSSR, 1958, Vol. 28, No. 1, pp. 127-129 (author Kushner, Kh. F.)

USSR / Cultivated Plants. Cereal Crops.

M-3

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 58508

Author : Yur'yev, V. Ya.

Inst : Khar'kov University

Title : Principal Trends in the Selection of Grain Crops

Orig Pub : V sb.: Vopr. metodiki selektsii pshenitsy i kukuruzy,  
Khar'kov. Un-t, 1957, 5-10

Abstract : No abstract given

Card 1/i

16

YUR'YEV, V.Ya.

[General breeding and seed production of field crops] Obshchaya  
selektsiya i semenovodstvo polevykh kul'tur. 3., perer. izd.  
Moskva, Gos. izd-vo selkhoz. lit-ry, 1958. 344 p. (MIRA 11:10)  
(Field crops)

VLASYUK, P.A., akademik, otv.red.; YUR'YEV, V.Ya., akademik, zam. otv.  
red.; BUZANOV, I.F., akademik, red.; DANILENKO, I.A., red.;  
DELOHE, L.N., doktor biolog.nauk, red.; KUCHUMOV, P.V., doktor  
sel'skokhoz.nauk, red.; POLYAKOV, I.M., red.; STRONA, I.G.,  
kand.sel'skokhoz.nauk, red.; TKACHENKO, F.A., kand.sel'skokhoz.  
nauk, red.; CHIZHENKO, I.A., kand.ekonom.nauk, red.; LESOVICHENKO,  
Ya.V., red.; MANOYLO, Z.T., tekhn.red.

[Vegetables and potatoes; works of scientific mission, No.2]  
Ovoshchnye kul'tury i kartofel'; trudy nauchnoi sessii, vypusk 2.  
Kiev, Izd-vo Ukrainskoi Akad.sel'khoz.nauk, 1960. 132 p.

(MIRA 14:1)

1. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut  
rasteniyevodstva, selektsii i genetiki. 2. Chlen-korrespondent  
Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina  
(for Denilenko). 3. Chlen-korrespondent AN USSR (for Strona).  
(Vegetable gardening) (Potatoes)

VLASYUK, P.A., akademik, otv.red.; YUR'YEV, V.Ya., akademik, zam.otv.red.;  
 BUZANOV, I.F., akademik, red.; DANILENKO, I.A., red.; DELONE,  
 L.N., doktor biolog.nauk, red.; KUCHUMOV, P.V., doktor sel'skokhoz.  
 nauk, red.; POLYAEV, I.M., red.; STRONA, I.G., kand.sel'skokhoz.  
 nauk, red.; TEACHENKO, F.A., kand.sel'skokhoz.nauk, red.;  
 CHIZHENKO, I.A., kand.ekonom.nauk, red.; BLANIHA, L.F., red.;  
 VIDONYAK, A.P., khim.-tekh.n.red.

[Problems in improving the quality of agricultural products; pro-  
 ceedings of the scientific session] Voprosy uluchsheniia ka-  
 chestva sel'skokhoziaistvennoi produktii; trudy nauchnoi sessii.  
 Kiev, Izd-vo Ukrainskoi Akad.sel'khoz.nauk. No.4. [Feeds and  
 livestock products] Korma i produkty zhivotnovodstva. 1960. 143 p.  
 (MIRA 14:1)

1. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut  
 rasteniyevodstva, selektsii i genetiki. 2. Chlen-korrespondent Vse-  
 soyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina i  
 Ukrainskoy akademii sel'skokhozyaystvennykh nauk; Nauchno-issledo-  
 vatel'skiy institut zhivotnovodstva Lesostepi i Poles'ya USSR (for  
 Danilenko). 3. Chlen-korrespondent AN USSR (for Polyakov).  
 4. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut raste-  
 niyevodstva, selektsii i genetiki (for Strona).  
 (Feeds) (Stock and stockbreeding)

YUR'YEV, V.Y., [Iur'iev, V.IA.], akademik, dvazhdy Geroy Sotsialisticheskogo Truda; PAKHOMOVA, V.P., kand.ekonom.nauk

Winter hardiness of certain rye varieties. Vistyk sil'hosp.nauky 4, no.8:21-24 Ag '61. (MIRA 14:7)

1. Ukrains'kiy ordena Lenina naukovo-doslidniy institut roslinnitstva, selektsii i genetiki.  
(Rye) (Plants--Frost resistance)

YUR'YEV, V. Ya., otv. red. [Suppl.]; STRONA, I.G., kand. sel'khoz. nauk, zam. otv. red.; VOL'F, V.G., red.; POLYAKOV, I.M., red.; LAPTSEVICH, G.P., red.; KIREYEV, F.N., red.; FOXID'KO, A.I., red.; POTOTSKAYA, L.A., tekhn. red.

[Scientific problems in seed production, the study and the inspection of seeds] Nauchnye voprosy semenovodstva, semenovedeniya i kontrol'no-semennogo dela; sbornik materialov. Kiev, Izd-vo Ukr. akad. sel'khoz. nauk, 1962. 203 p. (MIRA 16:5)

1. Soveshchaniye po organizatsii nauchno-issledovatel'skoy raboty v oblasti semenovodstva, semenovedeniya i kontrol'no-semennogo dela. Kharkov, 1961. 2. Ukrainskiy nauchno-issledovatel'skiy institut rasteniyevodstva, selektsii i genetiki (for Strona). (Seed industry)



YUR'YEV, Ya.M., inzh.; KORSHUNOV, V.A., inzh.; OBODOVSKIY, A.A., teknik

Improvement of devices in the interior of TP-230-2 boiler drums.  
Energetik 9 no.8:1-5 Ag. '61. (MIRA 14:8)  
(Boilers)

YE. A. YUR'YEV

Rol' Sibiri V Ekonomike Sel'skogo Khozyaystva Strany  
(by) I. G. Mishchenko (1) Ye. A. Yur'yev. Moskva, Ekonomizdat, 1961.

228 P. Tables.

*Yur' yev, Yu.*

AUTHOR: Yur'yev, Yu.

27-12-12/27

TITLE: In the Fields of the Krasnoyarsk Kray (Na polyakh Krasnoyarskogo kraya)

PERIODICAL: Professional'no - Tekhnicheskoye Obrazovaniye, 1957, # 12, p 17 (USSR)

ABSTRACT: The article states that more than 7,000 students of the Labor Reserves' agricultural mechanization schools had been working this fall on the Sovkhoz fields of the Krasnoyarsk Kray bringing in the rich harvest. They arranged a competition for the best results obtained, and the article gives some particulars mentioning the names of the most successful men.

AVAILABLE: Library of Congress

Card 1/1



SUBMITTED: September 1, 1962

YUR'YEV, Yu. I., Cand tech Sci -- (diss) "Effect of the degree of rolling on the rigidity of frame saws." Minsk, 1960. 12 pp; (Ministry of Higher, Secondary Specialist, and Professional Education, Belorussian SSR, Belorussian Forestry Engineering Institute, 1960). 120 001963220012-5 (1960, 1960, 1960)

LAPIN, P.I.; KONDRATOVICH, N.Ye.; YUR'YEV, Yu.I.; ANTSIFEROVA, T.S.; GERNET, G.M.; POTOLOVSKIY, N.I., red.; MEL'NIKOVA, M.S., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Manual on the assembly, operation, maintenance and repair of the equipment of sawmills and woodworking enterprises] Spravochnik po montazhu, ekspluatatsii i remontu oborudovaniia lesopil'nykh i derevoobrabatyvaiushchikh predpriatii. Moskva, Goslesbumizdat, 1961. 443 p.

(MIRA 14:11)

(Woodworking machinery) (Sawmills--Equipment and supplies)

YUR'YEV, Yu.I., kand.tekhn.nauk; GERNET, G.M., inzh.

New developments in the field of circular saws. Der.prom. 10 no.5:  
14-15 My '61. (MIRA 14:5)

1. Arkhangel'skiy lesotekhnicheskii institut im. V.V.Kuybysheva.  
(Circular saws)



LAPIN, Petr Ivanovich; KONDRATOVICH, Nikolay Yemel'yanovich; YUR'YEV,  
Yuriy Ivanovich; ODINTSOVA, L.I., red.; MART'YANOVA, L.I.,  
tekhn. red.

[Design and use of modern frame saws] Konstruktsii i eksplu-  
atatsiia sovremennykh lesopil'nykh ram. Arkhangel'sk,  
Arkhangel'skoe knizhnoe izd-vo, 1962. 82 p.

(Saws)

(MIRA 16:12)

YURYEV, Yu. K.

**Yu. K.** Chemical nature of gasoline from the Ural and its catalytic aromatization. N. D. Zolotarevich and Yu. K. Yur'ev. *Shil. acid. in U. R. S. S. Khim. in fizy. math.* 1930, 23:161. Sci. papers. Were removed by means of NaOH and  $H_2Cl_2$  and distn. was carried out over freshly reduced Cu. Aromatics were distd. by dissolving them in  $H_2SO_4$  contg. 7-10%  $SO_3$ . The remaining cyclic hydrocarbons were dehydrogenated by passing them

at a rate of 6-7 drops per min. through a tube 1 x 30 cm. held at 300-310° and filled with platinum C (30% Pt). The total yield of aromatics was thereby increased to 46%. Gasoline from Sarakhat contained no aromatics, but 4% of it could be converted into aromatics by dehydrogenating cyclic hydrocarbons. Aromatics thus obtained can be aromatized without further purification. Hydrocarbons not affected by the dehydrogenation process are satd. aliphatic hydrocarbons (C 84.29-86.50%, H 15.72-15.50%). V. KALICHMANOV

ASB-564 METALLURGICAL LITERATURE CLASSIFICATION

CP

PROCESSES AND ESTIMATES MUST

The constitution of Ural petroleum (Pecan). N. D. Zelinikii and Yu. K. Yur'ev. *Brennstoff-Chem.* 14, 347-9(1937); cf. C. A. 23, 4112 and Sakhanov, *et al.*, part VI of preceding abstr.--Analytical data for 6 fractions between 160° and 240° are tabulated. Aromatic compds. were detd. by both the  $H_2SO_4$  and the aniline-point methods with different results. Hydroaromatic compds. were detd. as aromatic compds. after catalytic dehydrogenation. Paraffins and naphthene hydrocarbons were detd. by the Carpenter naphthene no. and the aniline point. Aromatic compds. were highest in the 150-70° fraction. Hexahydroaromatic compds. were the same throughout the fractions. Other polymethylene cyclic and paraffin hydrocarbons increased with h. p. Mono-substituted  $C_{10}H_{18}$  deriva. were found only in the 225-240° fraction; all the disubstituted benzenes were o-derivs. Naphthalene hydrocarbons were found neither in the aromatic compds. nor the dehydrogenated hydroaromatic compds. in contrast to the results with Bakou oils. W. Jung

ASTM-SL6 METALLURGICAL LITERATURE CLASSIFICATION

Chemical properties of petroleum from Sterlitamak. N. D. Zelinskii and Yu. K. Yur'ev. *Bull. acad. sci. U. R. S. S., Classe sci. math. sci.* 1946, 135-9 (in English 139-40). Sterlitamak crude oil ( $d_4^{20}$  0.890) is a S crude oil (2.43%) S cont. paraffins, naphthenes and aromatic compds. After removal of S compds. with Hg salts (mercaptans and disulfides present, thiophene and its deriva. absent), 6 fractions between  $60^\circ$  and  $300^\circ$  were investigated for their content of aromatic compounds. ( $H_2SO_4$  and aniline methods), hydrosaromatic compds. (dehydrogenation with Pt (cf. C. A. 6, 504; 7, 222; 17, 2567; 18, 244, 2902, 3184)), naphthenes (calcd. by the method of Sakharov, C. A. 28, 295-9) and paraffins (by difference). Naphthalene deriva. were absent. High-boiling fractions were found to be similar in chem. compn. to those of Perm crude oil (C. A. 28, 299) but gasoline and kerosene fractions contained a smaller amt. of aromatic compds. Nevertheless, removal of aromatic compds. and S compds. in refining kerosene cannot be avoided.

*Ca*

R. D. Zolinskii and his scientific activities. R. Ya.  
Levina and Yu. K. Yur'ev. J. Chem. Ind. (Moscow)  
1934, No. 3, 28-37. H. M. Leicester

2

COMMON ELEMENTS

PERIODIC TABLE OF THE ELEMENTS

AMERICAN METALLURGICAL LITERATURE CLASSIFICATION

STANDARD SYMBOLS

STANDARD SYMBOLS

The mechanism of the action of aluminum chloride on biphenyl. Yu. B. Yur'ev and R. Ya. Levina, *Uchenye Zapiski (Khim. Ser. Mosk. Gos. Univ.)* 2, 203 (1954); Chem. Abstr. 1955, 11, 3243. Products obtained from the cracking of biphenyl at 500-550° in the presence of  $AlCl_3$  are predominantly benzene (73.6%) as well as methylcyclopentane (18.5%), toluene (4%), cyclohexane (4%). Paraffins and olefins were not formed.

W. A. Moore

A 94:564 METALLURGICAL LITERATURE CLASSIFICATION

CH

PROCESSES AND PROPERTIES INDEX

Catalytic hydrogenation of the homologs of pyrrole and dehydrogenation of their tetrahydro derivatives. Yu. K. Var'ev and P. F. Shen'yan. *J. Gen. Chem. (U. S. S. R.)* 46:1238-41(1974); cf. Zolinskii and Var'ev, *C. A. A. 24*, 1110; 25, 2997. — *N*-Methylpyrrole, *b.m.* 112.3°, *n<sub>D</sub><sup>20</sup>* 1.467, *d<sub>4</sub><sup>20</sup>* 0.9698; *N*-ethylpyrrole (I), *b.m.* 120-30°, *n<sub>D</sub><sup>20</sup>* 1.4615, *d<sub>4</sub><sup>20</sup>* 0.9005, and *N*-propylpyrrole (II), *b.m.* 146.5-7.5°, *n<sub>D</sub><sup>20</sup>* 1.4773, *d<sub>4</sub><sup>20</sup>* 0.8833, were obtained from C<sub>4</sub>H<sub>4</sub>NK and the alkyl halides by the method of Okko (C. A. 9, 73) and then hydrogenated by the method of Sabatier and Senderens. Of the 3 catalysts used, Os-asbestos failed to catalyze the reaction, Pt-C gave very poor results with a rapid poisoning of the catalyst, while Pd-asbestos at 160° gave good results. The hydrogenation was in each case continued until the product showed a const. *n*. The synthesized bases were identified by converting into the picrates and crystal. from abs. alc. to a const. *m. p.* *N*-Methylpyrrolidine, *b.m.* 80-1°, *n<sub>D</sub><sup>20</sup>* 1.4311, *d<sub>4</sub><sup>20</sup>* 0.8184, *M. D.* 27.12 (found), *M. D.* 27.19 (calcd.); picrate, *m.* 224°. *N*-Ethylpyrrolidine (III), *b.m.* 103.5-4.5°, *n<sub>D</sub><sup>20</sup>* 1.4362, *d<sub>4</sub><sup>20</sup>* 0.8166, *M. D.* 31.79 (found), *M. D.* 31.8 (calcd.); picrate, *m.* 185°. *N*-Propylpyrrolidine (IV), *b.m.* 127-8.5°, *n<sub>D</sub><sup>20</sup>* 1.4389, *d<sub>4</sub><sup>20</sup>* 0.8171, *M. D.* 30.62 (found), *M. D.* 30.37 (calcd.); picrate, *m.* 101°. The law is obtained by different investigators for these compounds is caused by contamination with fatty amines formed by the decomposition of the pyrrole ring. III dehydrogenated by the method of Zolinskii at 290° with the Pt-asbestos catalyst gave I and some *α*-ethylpyrrole. IV treated at 270° as above gave pure II. Chas. Blanc

ASAC-11A METALLURGICAL LITERATURE CLASSIFICATION

SUBJECT DIVISION		SUBJECT DIVISION	
TERMS	TERMS	TERMS	TERMS
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

COMMON ELEMENTS										PROCESSING AND PROPERTIES INDEX										INT. AND EXT. INDEX									
MATERIALS INDEX										PROPERTY INDEX										CLASSIFICATION									
<p><i>la</i></p>										<p>Kinetics of the catalytic dehydrogenation of dimethylcyclohexane. A. A. Balandin and Yu. K. Yur'ev. J. Phys. Chem. (U. S. S. R.) 3, 363-406 (1934). The speed of the reaction on Ni and Al oxide catalysts was studied as a function of temp. and of the initial concns. of the dimethylcyclohexane (I)-xylene (II) mixts. (consisting in both cases of all three isomers). For all mixts. contg. 0-100% I the energy of activation from 200° to 350° is 14,700 cal. per mol. but falls to 12,700 in a 10% mixt. Methane formation is slight if I is pure. The rate of dehydrogenation of I is slightly greater than that of cyclohexane. The analyses were made by means of refractive indexes, which are practically a linear function of the compn. of the mixt. of I and II. P. H. RATHIANN</p>										<p>2</p>									
<p>AS4-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
<p>REGION 1</p>										<p>REGION 2</p>										<p>REGION 3</p>									
<p>REGION 4</p>										<p>REGION 5</p>										<p>REGION 6</p>									



Survey of gas deposits in the Metallurg gas fields,  
lower Volga river. V. A. Sokolov and Yu. K. Yur'ev.  
*Neftyanoe Khozaystvo* 26, No. 1, 20-2(1934).—The  
composition of gases obtained through drilling up to a depth  
of 100 m. and suction exercised by the difference in the  
water level in bottles placed on the ground was  $\text{CO}_2$ ,  
1.6-3,  $\text{O}_2$  16.8-20.2, and hydrocarbon gases about 0.04%.  
The radioactivity of the gases was 0.02-1.88 divisions  
of the electroscope per min. A. A. Rehtilinsk

COMMON ELEMENTS										COMMON VARIANTS									
1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
<p>Desulfurizing Sterilamak gasoline with aluminum chloride. N. D. Zelinskii and Yu. K. Yur'ev. <i>Neftekhim</i> Khimicheski 26, No. 9, 36 (1934); <i>Foreign Petroleum Tech.</i> 3, 193-5 (1935) (Translation).—It was possible to remove allyl sulfide, <i>sec</i>-heptyl sulfide and benzyl sulfide by treatment with 1-6% <math>AlCl_3</math> and to lower the S content of the gasoline to 0.005%, by using only 1% <math>AlCl_3</math>. <i>n</i>-Heptyl sulfide, ethyl sulfide and ethyl disulfide are only slightly attacked by <math>AlCl_3</math>. A. A. Bochtinsk</p>																			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>RECENT WORK</p>									
<p>RECENT WORK</p>										<p>RECENT WORK</p>									

CO

10

Catalytic aromatization of benzene. N. D. Zelinski and Yu. K. Yur'ev. *Compt. rend. acad. sc. U. R. S. S.* 2, 725-7 (in German 275-9) (1955). Samples of benzene were passed over dehydrogenation catalysts (Pt on activated C at 310° or Ni on  $Al_2O_3$  at 300-2°) at 1 cc. per 5 min. and the increase in content of aromatic hydrocarbons in the benzene was detd. The increase varied with the source of the benzene from 25% for those originally high in aromatic hydrocarbons to 100% for those originally low in aromatic hydrocarbons. V. H. M.

ASAC-114 METALLURGICAL LITERATURE CLASSIFICATION

Cracking of kerosene and gas oil from Perm crude oil in the presence of aluminum chloride. Yu. K. Yur'ev. *Neftekhim. Khim.* 1936, No. 2, 68-9.—The kerosene fraction contained 60% aromatic, 25% naphthene, 15% paraffin hydrocarbons and 2.4% S. The reaction started at 160° and was discontinued at 230-40°. The cracked distillate amounted to 53.5% and contained 4.25% of a "benzene" and 1.8% of a "toluene" fraction, each on the original kerosene. The gas oil contained 66% aromatic, 23% naphthene, 12% paraffin hydrocarbons and 4.07% S. The cracked distillate started to boil at 260°, yielding about 32.5% of cracked distillate, which contained the same amount of "benzene" and "kerosene" fractions as the kerosene, in addition to 0.26% S. The cracked fractions, because of their high content in aromatic hydrocarbons, can be directly ultrated. Nineteen references.

A. A. Bochtinsk

A. A. Boettling

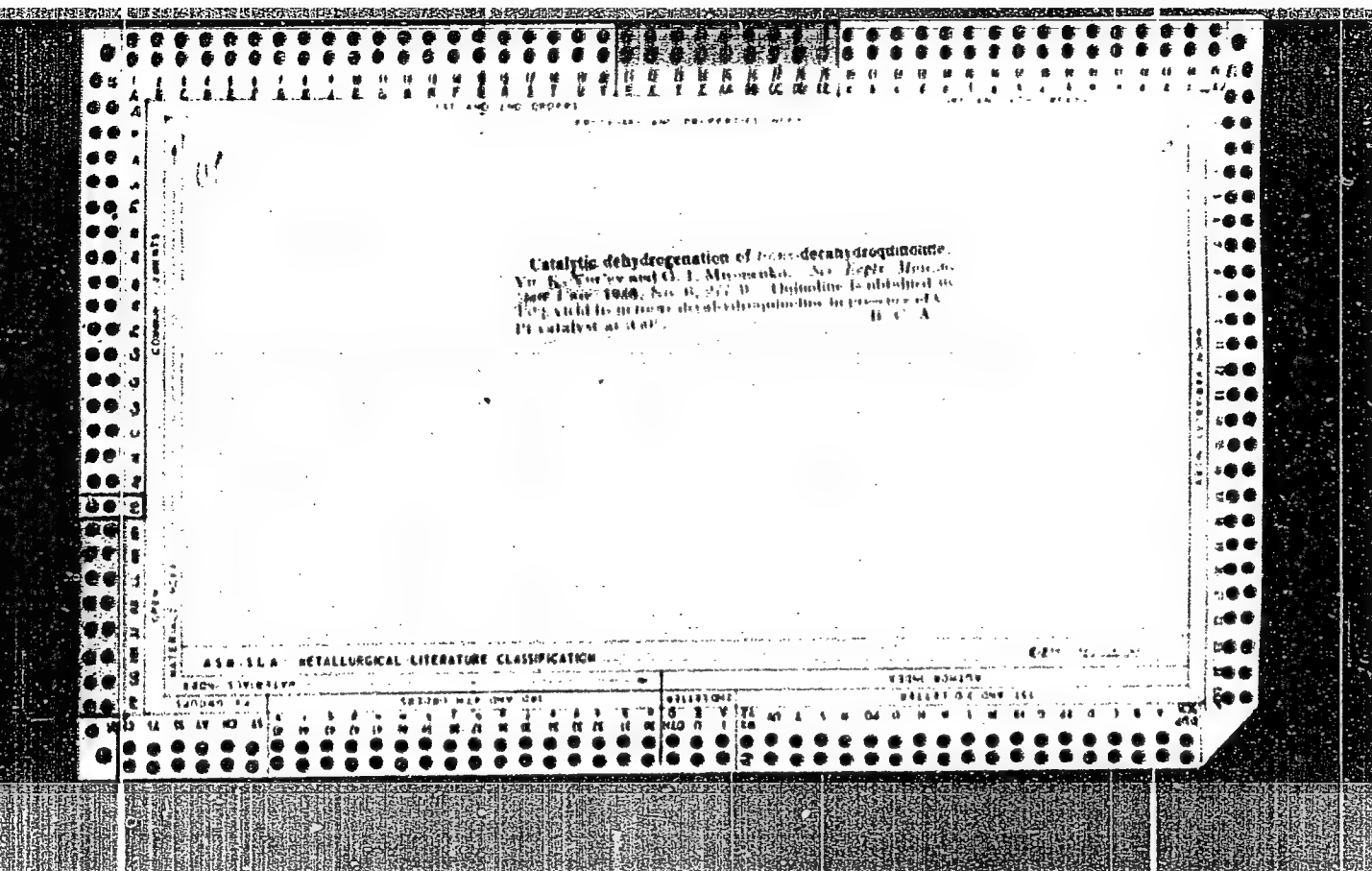
## ABSTRACT METALLURGICAL LITERATURE CLASSIFICATION

Ca

22

Modification of chemical composition of Surachani petroleum in migrating from deep to shallow deposits. Yu. K. Yur'ev. *Sci. Repts. Moscow State Univ.* 1936. No. 6, 269-71.—The d. of petroleum obtained from surface deposits in 1900 was more than that of petroleum now obtained. Chemical composition of Kala petroleum. Yu. K. Yur'ev and I. A. Musazev. *Ibid.* 273-5.—Analytical data are recorded. B. C. A.

ASAC-544 METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND COLUMNS																										3RD AND 4TH COLUMNS																																																																																																																																	
PROCESSING AND PROPERTIES INDEX																																																																																																																																																											
<div style="display: flex; justify-content: space-between;"> <span>Ca</span> <span>22</span> </div> <p>products under atmospheric pressure. I. Desulfurization in presence of 20, 40 and 60% nickel catalysts. I. N. Tit and Yu. K. Yur'ev. <i>Sci. Repts. Moscow State Univ.</i> 1966, No. 6, 330-33. The activity of freshly prepd. Ni catalyst falls during use to a const. value; the stable catalyst eliminates about half of the S content of petroleum products. The activity of catalysts contg. 20% Ni is less than 40% Ni and equal to those contg. 60% Ni. Evolution of H<sub>2</sub>S begins after a certain time, the length of which is proportional to the Ni content of the catalyst. II. Desulfurization of kerosene fractions in a stream of pyrolysis gas. I. N. Tit, A. P. Plate and N. P. Glushnev. <i>Ibid.</i> 365-74. Satisfactory removal of S is achieved by passing the petroleum fraction over 40% Ni catalyst in a stream of pyrolysis gas from which olefins have been removed. B. C. A.</p>																																																																																																																																																											
ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION																																																																																																																																																											
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PROPERTIES AND POLYMERIZATION

The action of aluminum chloride on bicyclohexyl.  
Yu. K. Vor'ev, R. Ya. Levina and A. I. Kudryavtsev.  
J. Gen. Chem. (U. S. S. R.) 6, 1700-6 (1935); cf. C. A.  
36, 8191. Cracking bicyclohexyl (I) at 160-230° in the  
presence of AlCl<sub>3</sub> gives a product, b. 13-135°, contg. cyclo-  
hexane 32, cyclopentane 12.8 and methane hydrocarbons  
63.6%. The latter are composed of 41% isopentane, b.  
14-32°. Aromatic compounds and olefins are not formed.  
I results in nearly 100% yield from recryst. bicyclopentyl, m.  
71°, by hydrogenating it in the presence of Ni (60°C) on  
Al<sub>2</sub>CO<sub>3</sub> (Zelinskii and Komarovskii, C. A. 18, 2885) at an  
initial temp. of 100° and 90 atm. The exothermic reac-  
tion is regulated at 160° by addn. of H<sub>2</sub> every 15-20 min.  
The results depend on energetic stirring (300 r. p. m.) of  
the reaction mixt. Chas. Blanc

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

11341 804177

11341 804177





COMMON ELEMENTS		PROCESSING AND PREPARATION		ANALYSIS	
<p>The cracking of decahydroanthracene in the presence of anhydrous aluminum chloride. M. Ya. Levina, V. K. Vayev and A. I. Lashkonevskiy. J. Gen. Chem. (U.S.S.R.) 7, 1005-N(1937). The cracked product contains 16-35% aromatic hydrocarbons, 64-77% naphthenes and a small amt. of paraffins. This shows that when double bonds occur in 6-membered rings, AlCl<sub>3</sub> cracking can produce aromatic compounds. H. M. L.</p>					
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>					
SOURCE SYSTEM		SOURCE NAME		SOURCE NUMBER	
SOURCE OF		SOURCE NAME		SOURCE NUMBER	

Cracking bicyclopentyl in the presence of anhydrous aluminum chloride. Vukobratovic, R. V., Levina and M. I. Spector. J. Gen. Chem. (U. S. S. R.) 7, 1581 d (1937); cf. C. A. 31, 2173. Cracking bicyclopentyl under the conditions previously used gives 35.5% hexamethylene compounds, 40.0% pentamethylene and 18.5% paraffin hydrocarbons. The pentamethylene ring is more stable toward splitting by  $AlCl_3$  than the hexamethylene ring, but it is less stable toward isomerization. The higher homologs of cyclopentane are more easily isomerized to cyclohexyl derivs. than is methylcyclopentane.

W. M. Leicester

ASAC-5LA- METALLURGICAL LITERATURE CLASSIFICATION

Ca

10

PROCESSES AND PROPERTIES - 100

Catalytic transformations of heterocyclic compounds.  
VII. Transformation of tetrahydrofuran (furanidine) into  
pyrrolidine and thiophane. Yu. S. Yur'ev and M. N.  
Ivukina, *J. Gen. Chem. (U. S. S. R.)* 7, 1804-7 (1937);  
cf. C. A. 31, 13091. When tetrahydrofuran is passed  
over  $Al_2O_3$  at  $400^\circ$  with  $NH_3$  it gives 43% pyrrolidine.  
If  $H_2S$  replaces  $NH_3$ , it gives 67% thiophane. These re-  
actions occur more easily than the corresponding ones  
with furan, but the mechanism is probably the same.  
H. M. Leicester

COMMON SUBJECTS

MATERIALS INDEX

ALUM. SLA METALLURGICAL LITERATURE CLASSIFICATION

REGIONAL DIVISION

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Catalytic transformations of heterocyclic compounds. VIII. Transformation of tetrahydrofuran (furanidine) into *N*-arylpiperidines. Yu. K. Yur'ev and G. A. Mitkina. *J. Gen. Chem.* (U. S. S. R.), 29:5 0(1937); cf. C. A. 32, 5481. When tetrahydrofuran with 2 mols. of a primary aromatic amine is passed over  $AlCl_3$  in a H current at 400° it gives *N*-aryl-substituted piperidines. *N*-Phenylpiperidine (45.5% yield), b. 107°, d<sub>4</sub><sup>20</sup> 1.0178, n<sub>D</sub><sup>20</sup> 1.581, M. R<sub>D</sub> 48.17 (calcd. 48.31), exaltation 1.80; picrate, m. 116°. The product purified by means of  $\alpha$ -C<sub>10</sub>H<sub>7</sub>SO<sub>2</sub>Cl showed practically the same M. R<sub>D</sub>. This mol. exaltation cannot thus be ascribed to any impurities, but is probably caused by the presence of a substituted amino group combined with the C atom of the C<sub>10</sub>H<sub>7</sub> ring. Such a discrepancy between the deid. and calcd. mol. refractions was observed in disubstituted amines by Brühl (*Phy. Chem.* 16, 218). *N*-*o*-Tolylpiperidine (43.4% yield), b. 103-4°, d<sub>4</sub><sup>20</sup> 0.9881, n<sub>D</sub><sup>20</sup> 1.5658, M. R<sub>D</sub> 52.04, exaltation 1.5; picrate, m. 101.5-2°. *N*-*p*-Tolylpiperidine (52.7% yield), b. 129-7°, m. 41.5°, d<sub>4</sub><sup>20</sup> 0.9728, n<sub>D</sub><sup>20</sup> 1.5583, M. R<sub>D</sub> 53.42, exaltation 2.25; picrate, m. 111°. Cyclohexylamine, b. 132-4°, obtained from PhNH<sub>2</sub> with H at 125° and 60 atm. in the presence of Ni on Al<sub>2</sub>O<sub>3</sub> (cf. C. A. 31,

2173<sup>1</sup>), gave 62.0% *N*-cyclohexylpiperidine, b. 70°, d<sub>4</sub><sup>20</sup> 0.9135, n<sub>D</sub><sup>20</sup> 1.4848, M. R<sub>D</sub> 48.08 (calcd. 47.52); picrate, m. 104.5°. Twelve references. IX. Synthesis of 1,2-disubstituted pyrroles. Yu. K. Yur'ev. *Ibid.* 2, 116-19.  $\alpha$ -Methylfuran in 3 mols. of a primary arylamine when passed at the rate of 15 drops per min. over  $AlCl_3$  at 475° in a H current gave 1-aryl-2-methylpyrrole. Because of a partial decoupling, the yields of the latter are considerably lower than those of *N*-arylpiperidines similarly obtained from furan (cf. C. A. 30, 8207<sup>9</sup>). 1-Phenyl-2-methylpyrrole (12% yield), b. 118-19°, d<sub>4</sub><sup>20</sup> 1.014, n<sub>D</sub><sup>20</sup> 1.582, M. R<sub>D</sub> 50.7 (calcd. 50.2). 1-*o*-Tolyl-2-methylpyrrole (10% yield), b. 111.5-13°, d<sub>4</sub><sup>20</sup> 1.0081, n<sub>D</sub><sup>20</sup> 1.565, M. R<sub>D</sub> 55.29 (calcd. 54.82). *p*-Isomer (10% yield), b. 110-21°, d<sub>4</sub><sup>20</sup> 1.0072, n<sub>D</sub><sup>20</sup> 1.568, M. R<sub>D</sub> 55.8. These new pyrrole derivatives (olive pine shavings red-violet, do not react with K<sub>2</sub> in ligand) and when oxidized do not give H<sub>2</sub>O<sub>2</sub> and *o*- and *p*-phthalic acid, resp.; this shows that the aryl radical is not connected with the C atom of the pyrrole ring C. H.

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Chemical composition of Changhyrloch petroleum.  
 Yu. K. Yur'ev and V. M. Kotelnikova. *Neftekhimicheskie*  
 18, No. 8, 47-8 (1977); *Chemia & Industria* 19, 1988.  
 This crude oil can be considered as a light petroleum;  
 it gives 21.7% of fractions distg. below 300°. The solid  
 paraffin content is only 0.51% and the S content 0.31%.  
 Changhyrloch petroleum is closely related to Gromy  
 nonparaffinic petroleum, but has a peculiarity in the  
 naphthene content of the motor-gasoline fraction: the  
 hexahydroaromatic hydrocarbon content of the 95-122°  
 fraction is 4 times that of the 01-95° or the 122-260°  
 fraction. A. Papiunian Continues.

Catalytic transformations of heterocyclic compounds.  
X. Synthesis of N-substituted pyrroles, N- and N-substituted pyrrolidines and α-methylthiophene. Yu. K. Yur'ev. *J. Gen. Chem.* (U. S. S. R.) 4, 1034 (1934) (English, 1938)(1938); cf. C. A. 32, 6309. Reaction of α-substituted tetrahydrofurans with NH<sub>3</sub> and primary aliphatic amines in the presence of Al<sub>2</sub>O<sub>3</sub> at 40-45° gives α-substituted pyrrolidines and with H<sub>2</sub>S under the same conditions α-substituted thiophenes. α-Methyltetrahydrofuran (I) with NH<sub>3</sub>, MeNH<sub>2</sub> (II) and EtNH<sub>2</sub> (III) gives, resp., α-methylpyrrolidine (27% yield), b<sub>m</sub> 104-4.5°, n<sub>D</sub><sup>20</sup> 1.4372, d<sub>4</sub><sup>20</sup> 0.8307; N,α-dimethylpyrrolidine (34.5% yield), b<sub>m</sub> 90-7°, n<sub>D</sub><sup>20</sup> 1.4253, d<sub>4</sub><sup>20</sup> 0.7994; and N-ethyl-α-methylpyrrolidine (28% yield), b<sub>m</sub> 110-20°, n<sub>D</sub><sup>20</sup> 1.4323, d<sub>4</sub><sup>20</sup> 0.8028. I with H<sub>2</sub>S gives α-methylthiophene (40% yield), b<sub>m</sub> 101.2-1.5°, n<sub>D</sub><sup>20</sup> 1.4022, d<sub>4</sub><sup>20</sup> 0.8541. Tetrahydrofuran with II gives N-methylpyrrolidine (35.5% yield), b<sub>m</sub> 79.5-0.8°, n<sub>D</sub><sup>20</sup> 1.4202, d<sub>4</sub><sup>20</sup> 0.8028, and with III N-ethylpyrrolidine (30.3% yield), b<sub>m</sub> 104.5-5.5°, n<sub>D</sub><sup>20</sup> 1.4340, d<sub>4</sub><sup>20</sup> 0.8084. Furan with II gives N-methylpyrrole (24.5% yield), b<sub>m</sub> 115-6°, n<sub>D</sub><sup>20</sup> 1.4000, d<sub>4</sub><sup>20</sup> 0.8008, and with III gives N-ethylpyrrole (27% yield), b<sub>m</sub> 120.5-0.5°, n<sub>D</sub><sup>20</sup> 1.4041, d<sub>4</sub><sup>20</sup> 0.8000, together with a small amt. of α-ethylpyrrole, b. 109-70°.

John E. Lisk

AS-8-51A METALLURGICAL LITERATURE CLASSIFICATION

TECHN. 179.6114

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Catalytic transformations of heterocyclic compounds.  
 II. Combined catalytic dehydration of furan and furanidin (tetrahydrofuran) with secondary and tertiary amines. Yu. K. Yur'ev, *J. Gen. Chem. (U. S. S. R.)* 9, 453-9 (1939); *cf. C. A.* 33, 5843<sup>1</sup>.—It had been shown that furan and tetrahydrofuran (I) are readily converted by primary amines in the presence of  $Al_2O_3$  at 400° into *N*-substituted pyrroles and pyrrolidines, resp. (*cf. C. A.* 32, 6399<sup>2</sup>). Similar reaction of I with  $Et_3NH$  and  $Et_3N$  formed considerable  $C_4H_8$  and *N*-ethylpyrrolidine (II) in 20% and 6% yield, resp. It is believed that the reaction proceeds with intermediate formation of  $Et_3NCH_2(CH_2)_2CH_2OH$  (III), which is hydrolyzed to give the mono- $Et$  deriv. and  $EtOH$  and these are dehydrated to yield II and  $C_4H_8$ . The  $H_2O$  liberated in the reaction aids in the hydrolysis of III. The reaction of 8 g. each of furan and  $Et_3NH$  gave considerable  $CO$  and 0.5 g. of a liquid product contg. traces of *N*-ethylpyrrole (IV). The probable cause of the poor IV yield is that the tautomerization of the intermediate 1-hydroxy-4-diethylamino-1,3-butadiene into the amino aldehyde,  $Et_2NCH=CHCH_2CHO$ , and its decompn. into  $Et_2NCH=CHMe$  and  $CO$  proceed at a much greater velocity than the reactions of hydrolysis and dehydration to IV (*cf. C. A.* 31, 1390<sup>3</sup>). C. H.

Lab. Org. Chem. im. N. D. Zelinskii, Moscow State U.

ASB-514 METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

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**Catalytic transformations of heterocyclic compounds.**  
**XII. Conversion of pentamethylene oxide (tetrahydro-  
 pyran) into piperidine, N-ethylpiperidine and penta-  
 methylene sulfide (penthiophane, tetrahydrothiopyran).**  
 Yu. K. Vor'ev, E. Ya. Pervova and V. A. Sazonova,  
*J. Gen. Chem. (U. S. S. R.)* 9, 590-4 (1939); *cl. C. A. 33,*  
*24831.* Analogous to the reaction of  $\gamma$ -alkylene oxides  
 (tetrahydrofurans) with  $\text{NH}_3$ , primary amines and  $\text{H}_2\text{S}$   
 in the presence of  $\text{Al}_2\text{O}_3$  at  $400-300^\circ$  to yield the correspond-  
 ing pyrrolidines and tetrahydrothiophenes (thiophanes),  
 the  $\delta$ -alkylene oxides react under the same conditions to  
 form piperidine and tetrahydrothiopyran (penthiophane)  
 derivs. Pentamethylene oxide (I), prep'd. from penta-  
 methylene glycol, with  $\text{NH}_3$  gives piperidine (II) (20%  
 yield), b.  $101^\circ$ ,  $n_D^{20}$  1.4521, and with  $\text{EtNH}_2$  gives N-  
 ethylpiperidine (17% yield), b.  $128.5-129^\circ$ ,  $n_D^{20}$  1.4442,  
 $d_4^{20}$  0.8232. I with  $\text{H}_2\text{S}$  gives pentamethylene sulfide  
 (III) (60% yield), b.  $139.4-140^\circ$ ,  $n_D^{20}$  1.5048,  $d_4^{20}$  0.9701.  
 II with  $\text{H}_2\text{S}$ , passed over  $\text{Al}_2\text{O}_3$  at  $415^\circ$  in a N atm., gives

III (4.3% yield). **XIII. Synthesis of pyrrolidines and  
 tetrahydrothiophene by catalytic dehydration of tetra-  
 methylene glycol (1,4-butanediol) with ammonia and with  
 hydrogen sulfide.** Yu. K. Vor'ev and N. G. Medov-  
 shchikov. *Ibid.* 628-30. The yields are slightly lower  
 than those obtained with tetrahydrofuran (IV) (*cl. C. A.*  
*32, 5487*). Tetramethylene glycol (V) passed with  $\text{NH}_3$   
 over  $\text{Al}_2\text{O}_3$  at  $400^\circ$  gives pyrrolidine (35% yield) and with  
 $\text{H}_2\text{S}$  gives tetrahydrothiophene (thiophane) (62.5%  
 yield). IV is obtained in 2% yield when V is passed over  
 $\text{Al}_2\text{O}_3$  in a N atm. John Livak

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

RECORD SYMBOLS

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CLASSIFICATION

100000 419 049 000

Catalytic reactions of heterocyclic compounds. XIV. Mechanism of transformation of oxygen-containing five-membered heterocyclic rings to nitrogen- and sulfur-containing heterocycles. Yu. K. Yur'ev, Kh. M. Minachev and K. A. Samurskaya. *J. Gen. Chem.* (U. S. S. R.) 9, 1710-16 (1939); cf. *C. A.* 33, 777F. To prove that intermediate hydroxy amino and hydroxy mercapto compds. are formed when tetrahydrofuran is converted into pyrrolidine or tetrahydrothiophene at high temps. over an  $Al_2O_3$  catalyst the authors showed that these proposed intermediates react smoothly under the conditions to yield the expected compds. Tetrahydrofuran was prepd. by catalytic hydrogenation of furan in the presence of palladium asbestos and also by hydrogenation of furan in an autoclave in the presence of Ni on  $Al_2O_3$ . Yield 86%, b. 64.5-6.5°. Tetramethylene chlorohydrin (I), prepd. by the action of HCl on tetrahydrofuran, b. 63-4°,  $n_D^{20}$  1.4629,  $d_4^{20}$  1.0867; yield 55-7%. Bennett's method (cf. *C. A.* 23, 2422) was used for the prepn. of I. The yield was 56%, b. 70°,  $n_D^{20}$  1.4910,  $d_4^{20}$  1.0289,  $MR_D$  29.55 (calcd. 29.80). It is a colorless oil with a terrible odor. I was converted into tetrahydrothiophene by passing 7-8 drops a min. over  $Al_2O_3$  at 250°, 300°, 350° and 400°. Likewise, tetrahydrofuran and  $H_2S$  were converted into tetrahydrothiophene. The yields were favored by increase in temp. (at 400° 95% was obtained from I and 90.5% from the furan). In every case I gave a higher yield than tetrahydrofuran. A yield of only 23.5% of tetrahydrothiophene was obtained when concd.  $H_2SO_4$  at 0° was used to dehydrate I. A similar yield was obtained when I and  $H_2S$  were passed at 400° over  $Al_2O_3$ . I was treated with  $PBr_3$  and 1-chloro-4-bromobutane, b. 63-4°,  $n_D^{20}$  1.4965, was obtained. The Gabriel reaction (Ex. 24, 3234 (1931)) gave pyrrolidine instead of 1-chloro-4-aminobutane. A 34% yield of pyrrolidine was obtained by passing I and  $NH_3$  over  $Al_2O_3$  at 400°. D. A. Agonv.

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Catalytic transformations of heterocyclic compounds. XV. The stability of the catalyst and optimum conditions in the transformation of tetrahydrofuran into pyrrolidine and thiophene and in that of furan into thiophene. Yu. K. Yur'ev and V. A. Trunova. *J. Gen. Chem.* (U. S. S. R.) 10, 31-4 (1940); cf. C. A. 34, 3731f.—In the methods previously described the transformation of tetrahydrofuran (furanidin) into pyrrolidine and thiophane (C. A. 32, 544f) and that of furan into thiophene (C. A. 30, 3215f) are best effected at 400° by passing the reactants at a rate of 6 drops/min. in a strong current of  $NH_3$  and  $H_2S$ , resp. In the prepn. of pyrrolidine and thiophane a 40-cm. layer and in that of thiophene a 72-cm. layer of the  $Al_2O_3$  catalyst are used. The activity of the catalyst remains practically const. for long periods of the reactions.

Chas. Blane

ASAC:SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCEDURES AND PRESENTING PAGES															INDEX AND ATN INDEXES														
<div style="position: relative;"> <span style="position: absolute; left: 10px; top: 10px; font-size: 2em; font-family: cursive;">ca</span> <div style="position: absolute; right: 10px; top: 10px; font-size: 2em;">10</div> <p>The catalytic transformations of heterocyclic compounds.            XVI. The synthesis of some pyridine and quinoline derivatives of pyrrolidine. Yu. K. Yur'ev, V. I. Baran, A. N. Enolaeva, S. M. Selverstova and S. T. Chernyakhovskii.  <i>J. Gen. Chem.</i> (U. S. S. R.) 19, 1839-42 (1940); <i>Ch. C. A.</i> 34, 4733<sup>a</sup>.—When 2-amino-pyrrolidine (I) and tetrahydrofuran (II) are passed over AlCl<sub>3</sub> in a N stream at 300°, they give 17% <i>N</i>-(2-pyridyl)pyrrolidine, b<sub>p</sub> 102°, d<sub>4</sub><sup>20</sup> 1.0441, n<sub>D</sub><sup>20</sup> 1.5707, <i>M.R.</i> calcd. 45.04, found 46.21 (<i>picrate</i>, m. 198°). Similarly, II and 3-amino-pyrrolidine (III) at 400° give 18% <i>N</i>-(3-pyridyl)pyrrolidine, b<sub>p</sub> 124-5°, d<sub>4</sub><sup>20</sup> 1.0700, n<sub>D</sub><sup>20</sup> 1.5833, <i>M.R.</i> calcd. 45.04, found 46.34 (<i>picrate</i>, m. 105.5-6°). 2-Methyltetrahydrofuran (IV) and I give 14% <i>N</i>-(2-pyridyl)-2-methylpyrrolidine, b<sub>p</sub> 110°, d<sub>4</sub><sup>20</sup> 1.0313, n<sub>D</sub><sup>20</sup> 1.5550, <i>M.R.</i> calcd. 49.56, found 51.25 (<i>picrate</i>, m. 131°). III and IV give 17% <i>N</i>-(3-pyridyl)-2-methylpyrrolidine, b<sub>p</sub> 118-19°, d<sub>4</sub><sup>20</sup> 1.0432, n<sub>D</sub><sup>20</sup> 1.5718, <i>M.R.</i> calcd. 40.60, found 51.14 (<i>picrate</i>, m. 128-8.5°). II and <i>n</i>-aminoquinoline give 0.5% <i>N</i>-(<i>n</i>-quinolyl)pyrrolidine, b<sub>p</sub> 171°, n<sub>D</sub><sup>20</sup> 1.1332, n<sub>D</sub><sup>25</sup> 1.6004, <i>M.R.</i> calcd. 60.38, found 64.57 (<i>picrate</i>, m. 152.5°).</p> <p style="text-align: right;">R. M. Leicester</p> </div>																													
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Catalytic transformations of heterocyclic compounds  
XVII. The use of the reaction of transformation of oxy-  
gen-containing heterocyclic compounds into nitrogen-  
and sulfur-containing compounds in establishing the  
structure of cyclic oxides. Yu. K. Yur'ev, V. I. Gusev,  
V. A. Tronova and P. P. Vardun. *J. Gen. Chem.* (U. S. S. R.) **31**, 344-8 (1941); cf. C. A. **35**, 6377. The compd.  
obtained by Franke and Lieben (C. A. **9**, 910) by dehydra-  
tion of 1,6-hexanediol with  $H_2SO_4$  was stated by them to be  
2-methyltetrahydropyran. The dehydration actually  
yields a mixt. of compds., but the chief product has  $M_n$  82.  
When it is passed over  $Al_2O_3$  at  $300^\circ$  in an  $NH_3$  stream, it  
gives 2-ethylpyrrolidine, and when the gas is  $H_2S$ , the  
product is 2-ethyltetrahydrothiophene,  $b.p.$   $135.5-135.6^\circ$ ,  $n_D^{20}$   
1.4800,  $d_4^{20}$  0.8451,  $M_R$  calcd. 35.08, found 35.36 ( $HgCl_2$   
compd., m.  $100^\circ$ ). The structure of this is proved by its  
prepn. from synthetic 2-ethyltetrahydrofuran (II). Thus  
the compd. of V. and L. is actually I. An increased no.  
of C atoms in the side chain of substituted  $\gamma$ -alkylene  
oxides causes a lower yield of product when they are con-  
verted to the corresponding N and S compds.

H. M. Leckster

ASB:SLA METALLURGICAL LITERATURE CLASSIFICATION

RECH: 170-2179

RECH: 230-179

RECH: 230-179

YUR'EV, Yu. A.

Transformation of heterocycles containing oxygen into heterocycles containing selenium. Yu. F. Yur'ev, S. E. Dubrovina, and E. P. Tretyakov (Moscow State Univ.). J. Gen. Chem. (U.S.S.R.) 16, 943-50 (1946); cf. C.A. 37, 4071<sup>11</sup>.—Dihydrofuran (9 g.) passed over  $Al_2O_3$  at  $400^\circ$  in an  $H_2$  stream gave 0.2 g. pyrrolidine, b.  $83-8^\circ$  (picrate, m.  $111-12^\circ$ ), and 0.5 g. pyrrole, b.  $130-1^\circ$ ; much decomposition was observed. Dihydrofuran (7 g.) passed over  $Al_2O_3$  at  $325^\circ$  in a  $H_2S$  stream gave 0.4 g. thiophene and a very small amt. of tetrahydrothiophene; somewhat greater yields, and more decomposition, were obtained at  $400^\circ$ . 3-Bromotetrahydrofuran passed over  $Al_2O_3$  in a stream of  $H_2S$  gave at  $400^\circ$  2 g. of crude product, which dropped to 1 g. at  $300^\circ$  (10 g. starting material in all cases), and was sepd. into thiophene and tetrahydrothiophene. Dihydrofuran failed to undergo a transformation after passage over a Pt-charcoal catalyst at  $140-200^\circ$ , but on standing at room temp. in a sealed tube it yielded a minute amt. of furan. Tetrahydrofuran was unchanged by passage over this catalyst at  $400^\circ$ . Dihydrofuran gave 60% dihydrothiopyran, b<sub>743</sub>  $143.6-4.2^\circ$ , n<sub>D</sub><sup>20</sup> 1.5328, d<sub>4</sub><sup>20</sup> 1.0244, after passage over  $Al_2O_3$  at  $400^\circ$  in a  $H_2S$  stream. XX. Transformations of heterocycles containing oxygen into heterocycles containing selenium. Yu. K. Yur'ev, Ibid. 851-4.—Furan (10 g.) was passed over  $Al_2O_3$  at  $450^\circ$  in a current of  $H_2Se$ ; the product, after washing with alkali, was identified as selenophene, b.  $110-12.7^\circ$  (23%), n<sub>D</sub><sup>20</sup> 1.5642, d<sub>4</sub><sup>20</sup> 1.5251. Tetrahydrofuran on similar treatment at  $400^\circ$  gave 54% selenophene (tetrahydroselenophene), b<sub>749</sub>  $139.2-9.6^\circ$ , n<sub>D</sub><sup>20</sup> 1.5479, d<sub>4</sub><sup>20</sup> 1.4715. Similarly, pentamethylene oxide at  $400^\circ$  gave 50% pentamethylene selenide, b<sub>755</sub>  $159-9.5^\circ$ , n<sub>D</sub><sup>20</sup> 1.5461, d<sub>4</sub><sup>20</sup> 1.3962.

G. M. Kozolagoff

YURIEV, Yu.

K.

"Catalytic Transformations of Heterocyclic Compounds. XI. The transformation of Heterocycles containing oxygen into Heterocycles containing selenium." by Yu. K. Yuriev (p.253)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1946, Volume 16, No. 6

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Catalytic transformations of heterocyclic compounds. XXI. Transformation of furan and furanoline (also hydrocarbons. Yu. K. Yurev, V. A. Tronova, M. Ye. Kuznetsova, and B. G. Novosadova (Moscow State Univ.). *J. Gen. Chem.* (U.S.S.R.) 17, 131-6 (1947) (in Russian); cf. *C.A.* 41, 1654c.—Furanidine (5-6 g.) was passed over  $AlCl_3$  in a strong current of  $Cl_2$  at  $375^\circ$ ; the catalyst slowly became covered with a brown deposit and had to be regenerated occasionally by air-blowing. The catalyst temp. rose initially up to  $406-430^\circ$ , becoming stabilized generally at about  $386^\circ$ . The yield of products was 1.5-1.95 g. The combined products from 10 runs were dried over  $CaCl_2$  and fractionated. A fraction (0.76 g.), b.  $78-84^\circ$ ,  $n_D^{20}$  1.4701, contained cyclohexadiene, formed evidently by bond redistribution of the initially formed cyclohexyne. A fraction (1.1 g.), b.  $100-20^\circ$ ,  $n_D^{20}$  1.4746, appeared to be a product of  $Cl_2$  condensation over  $AlCl_3$ , admixed with methylcyclohexadienes (from propylene and  $Cl_2$ ). Furan (5 g.) was passed over activated  $C$  in 1.25 hrs. in a  $H$  stream at  $375-500^\circ$ ; the best yield (16%) of butadiene was obtained at  $425^\circ$ ; when  $Cu$  (5%) on activated  $C$  was used at  $280-450^\circ$ , the best yield of butadiene (20.1%) was obtained at  $425^\circ$  when 8 g. furan was passed through the catalyst in 1.5 hrs. The results are interpreted as favoring the possibility of petroleum formation from carbohydrate matter in nature.

G. M. Kosolapoff

G. M. Korolynskii

# A.E.M. 12 A METALLURGICAL LITERATURE CLASSIFICATION



# Behavior of 3-bromofuranidine in the Grignard reaction.

I. Yu. K. Yur'ev, M. G. Voronkov, I. P. Grigorov, and G. Ya. Kondrat'eva. *Zhur. Obshch. Khim.* (J. Gen. Chem.) 18, 1804-10 (1948); cf. following abstr.--*J. Halofuranidines* (3-halotetrahydrofurans) react with Mg only sluggishly, yielding mixed organo-Mg compds. which rearrange to a great extent, with ring opening, to give MgX derivs. of  $\gamma$  unsatd. primary alcs. and react only to a minor extent as true Grignard reagents. Use of Na in place of Mg results in complete rearrangement and ring opening. 3-Bromofuranidine (75 g.) in Et<sub>2</sub>O was added to 12 g. Mg (activated by iodine) in 200 ml. Et<sub>2</sub>O over 10 hrs. with stirring and boiling, let stand overnight, heated 2 hrs., treated with 67 g. allyl bromide in Et<sub>2</sub>O, boiled 1 hr., and treated with dil. H<sub>2</sub>SO<sub>4</sub>; the usual treatment gave a variety of products from which were recovered 6 g. *allylcarbinol*, bp 113.5-14.5°, d<sub>4</sub><sup>20</sup> 0.8454, n<sub>D</sub><sup>20</sup> 1.4227; 3.5 g. *3-allylfurandine*, bp 140.5-41°, d<sub>4</sub><sup>20</sup> 0.8828, n<sub>D</sub><sup>20</sup> 1.4440; and 60 g. unchanged starting material. *1-Penten-4-ol*, bp 114.5-10°, d<sub>4</sub><sup>20</sup> 0.8314, n<sub>D</sub><sup>20</sup> 1.4245, was obtained in 57% yield from C<sub>4</sub>H<sub>9</sub>MgCl and AcH; this (95 g.) in CHCl<sub>3</sub> was treated with 60 g. Br in CHCl<sub>3</sub> with cooling and, after evapn., the crude dibromide was shaken 24 hrs. with 20 g.

powd. KOH in Et<sub>2</sub>O, with addn. of 20 g. KOH every 4 hrs., to yield 45% *2-methyl-4-bromofuranidine*, bp 64.5°, d<sub>4</sub><sup>20</sup> 1.4231, n<sub>D</sub><sup>20</sup> 1.4770. This (82 g.) was slowly added to 12 g. Mg in Et<sub>2</sub>O at reflux, heated 4 hrs. longer, treated with 80 g. allyl bromide in Et<sub>2</sub>O, heated 2.5 hrs., let stand overnight, and treated as above to yield 28% *1-penten-4-ol* and 1.5 g. *2,2'-dimethyl-4,4'-bisfuranidine*, bp 101.5-2°, d<sub>4</sub><sup>20</sup> 0.9056, n<sub>D</sub><sup>20</sup> 1.4553; if the reaction mixt. with Mg is decompd. by dil. acid prior to addn. of allyl bromide, the products include (low yields): *2-methylfuranidine*, bp 70-80°, d<sub>4</sub><sup>20</sup> 0.8576, n<sub>D</sub><sup>20</sup> 1.4092, the above-described *bisfuranidine*, and 27% *1-penten-4-ol*. Addn. of 38 g. 3-bromofuranidine to a dry Et<sub>2</sub>O soln. of MgBr<sub>2</sub> (obtained in anhyd. state from 12.1 g. Mg and 95 g. BrCH<sub>2</sub>CH<sub>2</sub>Br) yields a bulky ppt.; heating 20 hrs. and decompn. by H<sub>2</sub>O gave 30 g. unchanged starting material and traces of lower- and higher-boiling materials, which were not identified. Addn. of 38 g. 3-bromofuranidine to 23 g. Na in Et<sub>2</sub>O, and 4 hrs. refluxing gave 80% *1-buten-4-ol*, bp 112.5-13.5°, d<sub>4</sub><sup>20</sup> 0.8440, n<sub>D</sub><sup>20</sup> 1.4232. G. M. K.

USSR/Chemistry - Synthesis  
Furans

Oct 48

"Synthesis of Beta-Alkylfuranidines, II," Yu. K.  
Yur'yev, I. P. Gragerov, Moscow Ord of Lenin State  
U imeni M. V. Lomonosov, Lab of Org Chem imeni Acad  
N. D. Zelinskiy, 5 pp

"Zhur Obshch Khim" Vol XVIII, No 10

Gives general method for synthesis of beta-alkyl-  
tetrahydrofurans by reaction of lithium alkyls  
with beta-bromotetrahydrofuran. Ring opening  
occurred by action of Mg on beta-bromotetrahydro-  
furan with formation of 3-buten-1-ol. Submitted  
22 Sep 47.

2/50T68

IUR'EV, Iu. K.

Iu. K. Iur'ev and I. P. Gragerov, Synthesis of  $\beta$ alkyl-furanidines. II. p. 1811

This work gives a general method for the synthesis of  $\beta$ alkyl-furanidines by interaction of lithium alkyls with  $\beta$  bromo-furanidine. It is shown that the reaction of lithium on  $\beta$ -bromo-furanidine causes the opening of the ring of the latter to occur with the formation of allyl carbinol.

The Lomonosov, Moscow State University, Holder of the Order of Lenin  
The Zelinskii Lab. of Organic Chem., September 22, 1947

SO: Journal of General Chemistry (USSR) 28, (80) No. 10 (1948):

PA 53/49125

USSR/Chemistry - Hydration  
Chemistry - 2-Butyne-1, 4-diol Oct 48

"Hydration of 2-Butyne-1, 4-diol," Yu. K. Yur'yev,  
I. K. Karobitsyn, Ye. K. Mises, Lab of Org Chem  
Imeni Acad N. D. Zelinskii, Moscow State U Imeni  
M. V. Lomonosov, 1 2/5 pp

"Dok Ak Nauk SSSR" Vol IXII, No 5

Hydration of 2-butyne-1, 4-diol in methanol in  
presence of mercuric sulfate or its solution in  
27% sulfuric acid gave a 37% theoretical yield of  
4-methoxy-1-butanol-2-one, b.p. 86.5 at 9 mm,  
d (20/4), 1.095, n (20/D), 1.4395. Use of other

53/49125

USSR/Chemistry - Hydration (Contd) Oct 48

Solvents resulted in resinification. Submitted  
by Acad A. N. Nesmeyanov, 13 Aug 48.

YUR'YEV, YU. K.

53/49125

10

CA

Hydration of 2-butyne-1,4-diol. Yu. K. Yur'ev, I. K. Kozolitsyna, and E. K. Brige. *Doklady Akad. Nauk S.S.S.R.* 63, 615 (1948). Hydration of 2-butyne-1,4-diol (I) in MeOH in the presence of Hg sulfate gives 4-methoxy-1-butanol-2-one (II). I (4.1 g) was added in 32 g. MeOH to 32 g. MeOH and 2 g. Hg sulfate with cooling, then stirred 8 hrs. with addn. of two 2-g. portions of Hg sulfate, neutralized with Na<sub>2</sub>CO<sub>3</sub>, altered, dried, and distd., yielding 37% II, b<sub>p</sub> 86.5-7.5°, d<sub>4</sub><sup>20</sup> 1.095, n<sub>D</sub><sup>20</sup> 1.4365. The result was the same if 37% H<sub>2</sub>SO<sub>4</sub> was used for the medium. II gives a 2,4-dinitrophenylhydrazone, m<sub>p</sub> 97.9° (from EtOH). The product results from migration of the OH group to give a 1,2-diol of allen type, which rearranges to an acyclic and this add. MeOH to give II. G. M. Kosolapoff

PA 55/49T20

USERS / Chemistry  
Chemistry

SECRET

87. 2018

Interaction of Butadiene with Hydrogen Peroxide in the Presence of Aluminum Oxide, Yu. M. Kuznetsov, K. Yu. Kozlovskiy, Lab of Org Chem, Invent M. V. K. D. Zelinskiiy, Moscow State U Invent M. V. Kuznetsov, 3 pp

Doc Ak Neuk ESRH Vol III, No 3

Study of interaction of ethylene oxide with hydrogen sulfide in presence of aluminum oxide at 200 showed that basic reaction products, five- and six-member heterocyclic compounds with two heteroatoms, were acetaldehydes, thioacetals, alcohols

55/10720

55/49120

Water/Chemistry - Ethylene (Contd)

84 1011

thioxane and acetaldehyde. During contact of ethylene oxide with aluminum oxide, both thioxane and acetaldehyde were obtained at 200°. Letter was disproportionate. Submitted by Acad. A. N. Kiselevich 15 Sep 48.

YUR'YEV, YU. K.

55/49120

Avt: YUR'YEV, Yu. K., ALEKSANDROV, L. Ye., ARBATSKIY, A. V. /IDR/

29566

Sintyye nyekotorykh gomologov i N-samyeshchyennykh pirrola i pirrolidina.  
Zhurnal Obshch Khimii, 1949, vyp. 9, s. 1730-33.-Bibliogr: s. 1733

SO: LETOPIS' NO. 40

YUR'YEV, Yu. K.

PA 65/49T27

USSR/Chemistry - Heterocyclic  
Compounds

Apr 49

Furan Tetrahydro-

"Contact Conversion of Pyrrolidine, Pyrrolidine  
and Thiophane XIII " Yu. K. Yur'yev, A. A. Buger  
kova, Moscow Ord of Lenin State U imeni M. V.  
Lomonosov Lab of Org Chem imeni Acad N. D.  
Zelinskiy 34 pp

"Zhur Obshch Khim" Vol XIX, No 4

Complete hybrids of these five-membered heterocyclic  
compounds (pyrrolidine, pyrrolidine, furan, pyrrole  
and thiophene) are described. The results of the  
investigation of the properties of these compounds  
are presented. (See also 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 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1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 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1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 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2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 21



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YUR'YEV, Yu. K.

USSR Chemistry - Thiophene, Tetrahydro- Apr 49  
Furn, Tetrahydro-

Reaction of Alpha-Beta- and Alkylfuranidone  
into Thiophene Corresponding Thiophenes, XIII,  
Yu. K. Yur'yev, I. P. Grigorov, Moscow Ord of  
Lening State Univ. M. V. Lomonosov, Lab of Org  
Chem, Inst. of F. D. Zelinsky, 54 pp

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Alpha-alkyl and beta-alkyl-thiophenes are pre-  
pared by the subject reaction, which gives a  
greater yield (72-81% of the theoretical) of the  
beta-alkyl-thiophenes than of the alpha-compounds

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USSR Chemistry - Thiophene, Tetrahydro- Apr 49  
(Contd)

(Thiophene gives 65-70% of the theoretical). The  
former have higher boiling points; specific  
gravity, and indexes of refraction than the  
latter. Submitted 31 Jan 48.

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Synthesis of some homologs and N-substituted derivatives of pyrrole and pyrrolidine. Yu. K. Yur'ev, L. R. Aleksandrov, A. V. Arbat'kil, V. M. Karataev, I. K. Korobitsyna, and M. A. Pryanishnikova. *Zhur. Obshch. Khim.* (J. Gen. Chem.) 19, 1730-3 (1949); cf. *Uchenye Zapiski Mosk. Gosudar. Univ.* No. 79 (1945).—Furan (12 g.) and 17 g.  $\text{AmNH}_2$  passed in a N stream at 8-10 drops per min. over  $\text{AlCl}_3$  at  $465-70^\circ$  gave 14% 1-amylopyrrole,  $b_p$   $95-6^\circ$ ,  $d_4^{20}$  0.8643,  $n_D^{20}$  1.4731. Similarly, at  $450^\circ$ , 8 g. 2-ethylfuran in  $\text{NH}_3$  gave 5% 2-ethylpyrrole,  $b_p$   $104-5^\circ$ ,  $d_4^{20}$  0.8642,  $n_D^{20}$  1.4942. Furanidine (II) (18 g.) and 14.4 g. allylamine at  $400^\circ$  gave 1-allylpyrrolidine, isolated as the *picrate*, m.  $141^\circ$  (from EtOH), in unstated yield, with much tar. I (7 g.) and 9.7 g.  $\text{AmNH}_2$  at  $380^\circ$  gave 55.5% 1-amylopyrrolidine,  $b_p$   $81-2^\circ$ ,  $d_4^{20}$  0.8191,  $n_D^{20}$  1.4439; *picrate*, m.  $117.5-18^\circ$  (from EtOH). I (5 g.) and 5.8 g. cyclopentylamine at  $400^\circ$  gave 40% 1-cyclopentylpyrrolidine,  $b_p$   $91-2^\circ$ ,  $d_4^{20}$  0.8992,  $n_D^{20}$  1.4744; *picrate*, m.  $149.5-51^\circ$ . Furanidine (26 g.) and 10 g.  $(\text{CH}_3\text{NH})_2$  at  $400^\circ$  gave 1.3 g. 1,1'-ethylenedipyrrolidine,  $b_p$   $151-2^\circ$ ,  $d_4^{20}$  0.9800,  $n_D^{20}$  1.4715. Similarly, 20 g. I and 10 g.  $m\text{-Cl}_2(\text{NH})_2$  gave 2.8 g. 1,1'-*m*-phenylenedipyrrolidine,  $b_p$   $137-9^\circ$ ,  $d_4^{20}$  1.071,  $n_D^{20}$  1.5010; *picrate*, m.  $126-7^\circ$  (from EtOH). 2-Ethylfuranidine (10.2 g.) in  $\text{NH}_3$  similarly gave 9% 2-ethylpyrrolidine,  $b_p$   $122-3^\circ$ ,  $d_4^{20}$  0.8663,  $n_D^{20}$  1.4429; *picrate*, m.  $84-5^\circ$  (from EtOH).

G. M. Kosolapoff

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CA

Catalytic dehydration of 4-amino-1-butanol. XXV  
 Yu. K. Yur'ev, G. P. Mukhalovskii, and S. Z. Shapiro  
 (Lomonosov State Univ., Moscow); *Zhur. Obshchei*  
*Khim. (J. Gen. Chem.)* 19, 2217-21 (1949); *cf. C.A.* 22,  
 548; 44, 1002a, 1482d. Hydrolysis of  $\text{Cl}(\text{CH}_2)_4\text{Br}$   
 by aq.  $\text{K}_2\text{CO}_3$  gave 80%  $\text{HO}(\text{CH}_2)_4\text{OH}$ ; bp 108-109°,  $d_4^{20}$   
 1.0107,  $n_D^{20}$  1.4388, which with  $\text{HCl}$  gave  $\text{Cl}(\text{CH}_2)_4\text{OH}$ ,  
 bp 40-41°,  $d_4^{20}$  1.1323,  $n_D^{20}$  1.4485. This (110 g.) in 510  
 ml.  $\text{EtOH}$  was refluxed 8 hrs. with 90 g.  $\text{KCN}$  in 145 ml.  
 $\text{H}_2\text{O}$ , yielding 56%  $\text{HO}(\text{CH}_2)_4\text{CN}$ , bp 133-6°,  $d_4^{20}$  1.0406,  
 $n_D^{20}$  1.4178. This (21 g.) in 200 ml.  $\text{BuOH}$  treated at  
 reflux temp. with 13 g.  $\text{Na}$  yielded 24%  $\text{H}_2\text{N}(\text{CH}_2)_4\text{OH}$   
 (I), bp 36-8°,  $d_4^{20}$  0.9689,  $n_D^{20}$  1.4581. Passage of 7 g.  
 I at 5-6 drops/min. over  $\text{Al}_2\text{O}_3$  at 400° with a N atm. in  
 the reaction tube gave 37% pyrrolidine, bp 83-7°,  $d_4^{20}$   
 0.8569,  $n_D^{20}$  1.4431 (picrate, m. 111.5°); at 350° the yield  
 was 25%. Similar reaction but in a N<sub>2</sub> atm. at 400° gave  
 20% pyrrolidine and about 10% pyrrole; at 350° only 3%  
 pyrrolidine and traces of pyrrole were obtained. In all  
 expts. much carbonization took place, indicating severe  
 decompn. of I. G. M. K.

PA 66/49122

YUR'YEV, YU. K.

USSR/Chemistry - Dehydration  
Glycols Aug 49

"Catalytic Dehydration of Thiodiethylene Glycol and 1,4-Thioxane with Hydrogen Sulfide,"  
Yu. K. Yur'yev, K. Yu. Novitskiy, Lab of Org  
Chemiment N. D. Zelinskiy, Moscow State U  
iment M. V. Lomonosov, 31 pp

"Dok Ak Nauk SSSR" Vol LXVII, No 5

Records the yields of dithiane from the  
reactions of thiodiethylene glycol with hydrogen  
sulfide and thioxane with hydrogen sulfide  
in the presence of aluminum oxide during a  
temperature interval of 200-400° C for periods  
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(Contd)

of 55-60 minutes for 11 experiments. On the  
basis of these, the melting point of dithiane  
is computed at 108-110° C. Submitted  
1 Jun 49.

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Simultaneous catalytic dehydration of thiodiethylene-  
glycol and *p*-oxathiane with hydrogen sulfide. Yu. K.  
Yur'ev and K. Yu. Novitski. *Doklady Akad. Nauk*  
S.S.S.R. 67, 303-6 (1949).— Passage of  $S(CH_2CH_2OH)_2$   
(I) or  $S(CH_2CH_2OCH_2CH_2)_2$  (II) over  $Al_2O_3$  at 200–400°  
in  $H_2S$  yields  $S(CH_2CH_2)_2$ ,  $S(CH_2CH_2)_4$ ; the optimum temps.  
are 225–75° and 250°, resp., at which 67% yields are ob-  
tained. I, b, 136–7°,  $d_4^{20}$  1.1815,  $n_D^{20}$  1.6211, was passed  
over  $Al_2O_3$  in a rapid  $H_2S$  stream at 1 g. per 0.8 min.;  
similar conditions were used for II, b, 145.5–0.5°,  $d_4^{20}$   
1.1176,  $n_D^{20}$  1.5072, which was obtained by heating I with  
1 mole  $KHSO_4$ . *Dikiane* m. 110.5° (from  $Et_2O$ , followed  
by sublimation). G. M. Kosolapoff

Simultaneous dehydration of ethylene glycol with hydrogen sulfide. Yu. K. Yur'ev, K. Yu. Novitskii, and E. V. Kukhar'skaya. *Doklady Akad. Nauk S.S.S.R.* 68, 541-4 (1949). - Reaction of  $(CH_2OH)_2$  with  $H_2S$  over  $Al_2O_3$  at  $400^\circ$  yields mainly thiophene, with liberation of  $C_2H_4$ ; over an aluminosilicate catalyst  $O(CH_2CH_2OH)_2$  is dehydrated and dioxane is formed smoothly. The reaction probably proceeds via formation of ethylene oxide. Passage of 293.8 g. glycol (at 10 g./hr.) in a  $H_2S$  stream over  $Al_2O_3$  at  $225^\circ$  gave 25 g. water-insol. oil, which gave 2.4 g. *p*-oxathiane, b.p.  $145-6^\circ$ ,  $n_D^{20}$  1.4223,  $d_4^{20}$  1.1100, and 0.6 g. *p*-dithiane, m.  $109^\circ$ ; the aq. layer gave 11 g. AcH, 0.1 g. of its acetal with glycol, b.p.  $82.6-3.5^\circ$ ,  $n_D^{20}$  1.3900,  $d_4^{20}$  0.9882, 17 g. *p*-dioxane, b.p.  $101-1^\circ$ ,  $n_D^{20}$  1.4230,  $d_4^{20}$  1.0306, as well as 105 g. unreacted glycol. Similar reaction at  $400^\circ$  gave, from 280 g. glycol, 1.2 g. thiophene and a mixt. of unresolved S derivs.; considerable amts. of  $C_2H_4$  were evolved.  $O(CH_2CH_2OH)_2$  (20 g.) heated to  $200^\circ$  over 4 g. aluminosilicate catalyst gave 88.5% dioxane.  $(CH_2OH)_2$  was not dehydrated even at  $200^\circ$ . G. M. Kosolapoff

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Dehydration of thiodiethyleneglycol and disproportionation of *p*-oxathiane. Yu. K. Yur'ev and K. Yu. Novitskiĭ. *Doklady Akad. Nauk S.S.S.R.* 66, 717-19 (1949); cf. preceding abstr. —  $S(CH_2CH_2OH)_2$  (10 g., b. 136-7°,  $n_D^{20}$  1.5211,  $d_4^{20}$  1.1815) passed over  $Al_2O_3$  in 90 min. at 225° in a N atm. gave 4.1 g. (83%) *p*-dithiane, m. 109.5°, 0.6 g. *p*-oxathiane, b.p. 145.8°,  $n_D^{20}$  1.5000,  $d_4^{20}$  1.1150, and a trace of an aldehyde, probably AcH. Heating 30 g.  $S(CH_2CH_2OH)_2$  and 8 g. aluminosilicate catalyst to 170-80°, and then at 230-40° when disn. of oxathiane was complete, gave 17 g. *p*-oxathiane, b.p. 147-8°,  $n_D^{20}$  1.5058,  $d_4^{20}$  1.1181, and 3.4 g. *p*-dithiane. Passing 12.5 g. oxathiane over  $Al_2O_3$  at 230° in 90 min. in a N atm. gave 5.4 g. unreacted material, 0.9 g. *p*-dithiane, and some AcH; at 250°, 3.9 g. unreacted material is obtained, as well as 0.8 g. dithiane and some AcH;  $H_2S$  was detectable. G. M. Kosolapoff

CA

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Synthesis of amines of the cyclohexane series Yu. K. Vur'ev and I. K. Korobitsyna, *Vestnik Moshch. Univ.* No. 3, Ser. Fiz.-Mat. i Tekhn. Nauk No. 2, 87 (1954).  $\text{HCONH}_2$ , prepd. by slow concn. of 113 g.  $\text{HCOCl}$  and 110 g.  $(\text{NH}_4)_2\text{CO}_3$ , is treated at 160-80° with 50 g. cyclohexanone and heated 7 hrs. with recycling of the distil. ketone after drying; after diln. and recycling the sepd. formyl deriv. 5 hrs. with 75 ml. concd.  $\text{HCl}$ , 30%  $\text{KOH}$  is added to isolate 40% cyclohexylamine, b.p. 133-4°,  $n_D^{20}$  1.4601,  $d_4^{20}$  0.8650, and 13% dicyclohexylamine, b.p. 121-4°,  $n_D^{20}$  1.4852,  $d_4^{20}$  0.9114.  $\text{HCONH}_2$  (81 g.) treated similarly with 36 g. cyclohexanone gave 33% N-ethylcyclohexylamine, b.p. 114-15°,  $n_D^{20}$  1.4820,  $d_4^{20}$  0.9087; *picole*, m. 137° (from  $\text{EtOH}$ ). Similarly,  $\text{HCO}_2\text{NHPh}$  (from 167 g.  $\text{PhNH}_2$  and 120 g.  $\text{HCOCl}$ ), and 50 g. cyclohexanone gave 40% N-cyclohexylaniline, b.p. 158-5-9.5°,  $n_D^{20}$  1.5610,  $d_4^{20}$  1.0155.

G. M. Kuznetsov

1951